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19 August 1968

MEMORANDUM FOR THE RECORD

25X1A

SUBJECT: Trip Report - [redacted] Visit to [redacted]

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Burbank,

15-16 August 1968

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I. On 15 August the undersigned visited the [redacted] to review the status of the drag reduction program prior to presenting a briefing to Lockheed on this program. Their efforts of the past six weeks can be summarized as follows:

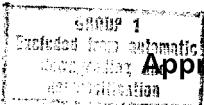
A. Experimental

1. Tunnel flow inclination survey with yaw head meter.
2. Wake survey with vorticity meter and tuft grid.
3. Wind tunnel and reflection plane tuft flow survey.
4. Diffuser alignment fixtures for drag reduction repeatability.

B. Supporting Analytical Effort

1. Wing surface flow field determination.
2. Spanwise energy and drag reduction correlation.
3. Refine analytical model by identification of diffusers with wing theory.

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II. On 16 August a briefing on the drag reduction program was presented to LAC personnel. In attendance from LAC were [redacted]. The briefing was presented in two parts: (1) induced drag reduction theory and results, and (2) the separated flow phenomena. Significant comments and reactions to the briefing are noted below:



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A. Induced Drag Reduction

It was generally agreed that although the theory represented a radical departure from the classical aerodynamic theory, one could not, with any confidence, negate the approach to the problem. Also, the wind tunnel test results to date were intriguing and would represent significant overall performance gains if they could be duplicated in flight. There was complete agreement that the scheduled larger scale wind tunnel tests at Ames, NASA, should be conducted and if the results continued to yield significant drag reductions, LAC should then be brought actively into the program for the U-2R modifications, interface and flight test effort. LAC felt that a definitive commitment should be made by mid-December in order to allow sufficient time for the necessary U-2R modifications and diffuser installations while vehicle 051 is in modification. The Ames wind tunnel test results should be available in time to meet this schedule.

B. Separated Flow Phenomena

Considerably more skepticism was voiced as to the validity of the separated flow phenomena observed in the [redacted] wind tunnel. The concern was that the disturbance could be tunnel or model scale induced. LAC was assured that their skepticism was shared by all and for this very reason, large scale, high Mach number tests were scheduled for the Ames facility. LAC suggested that to help ferret out this problem they tuft the wing of vehicle number 051 while it is down so that when it resumes flying, photographs can be taken to observe if any separated flow is observed in the suspect areas. It was the LAC recommendation, however, that even if the flights indicated no separated flow, the scheduled Ames investigation should be conducted as a check against the [redacted] facility. 25X1A

[redacted]
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